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**Date:** March 19, 2008 **Number of pages (including cover):** 21**To:** A. J. Hall, U.S. Patent and Trademark Office**Fax No.:** (571) 273-8300**Serial No.:** 10/822,556**Title:** PHOTOELECTRIC CONVERSION DEVICE FABRICATION METHOD,  
PHOTOELECTRIC CONVERSION DEVICE, ELECTRONIC APPARATUS  
MANUFACTURING METHOD, ELECTRONIC APPARATUS, METAL FILM  
FORMATION METHOD AND LAYER STRUCTURE AND SEMICONDUCTOR FINE  
PARTICLE LAYER AND LAYER**From:** Randy J. Pritzker**Direct dial:** 617.646.8247**Our File #:** S1459.70088US00**CERTIFICATE OF FACSIMILE TRANSMISSION 37 C.F.R. §1.8(a)**

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**Randy J. Pritzker****ORIGINAL DOCUMENTS WILL NOT BE MAILED.****MESSAGE:** Transmitted herewith is/are Proposed Agenda for Examiner Interview.

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MAR 19 2008**Docket No.: S1459.70088US00  
(PATENT)**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant(s): Masashi Enomoto et al.  
Serial No.: 10/822,556  
Confirmation No.: 2616  
Filed: April 12, 2004  
For: PHOTOELECTRIC CONVERSION DEVICE FABRICATION METHOD,  
PHOTOELECTRIC CONVERSION DEVICE, ELECTRONIC  
APPARATUS MANUFACTURING METHOD, ELECTRONIC  
APPARATUS, METAL FILM FORMATION METHOD AND LAYER  
STRUCTURE AND SEMICONDUCTOR FINE PARTICLE LAYER AND  
LAYER STRUCTURE  
Examiner: A. J. Hall  
Art Unit: 1795

Certificate of Transmission Under 37 CFR 1.8  
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Trademark Office, facsimile no. (571) 273-7416, on the date shown below.

Dated: March 19, 2008

*Kevin J. Ambler*

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Dear Sir:

**PROPOSED AGENDA FOR EXAMINER INTERVIEW**

Applicants' representatives thank Examiner Hall for granting a telephone interview, scheduled for Thursday, March 20, 2008 at 10:30 PM, in the above-identified application. In accordance with the Examiner's request, a proposed agenda for the telephone interview is provided below.

Applicants would like to discuss what Applicants believe are patentable concepts over the cited art and obtain the Examiner's view. Proposed claim amendments, reflecting what we believe to be patentable, are attached.

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Proposed Interview Agenda

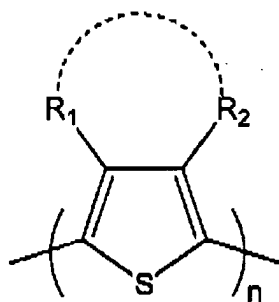
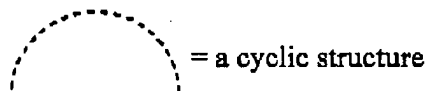
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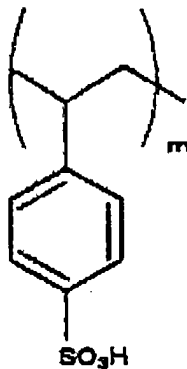
Proposed Claim Amendments

1. (Currently amended) A fabrication method of a photoelectric conversion device comprising a semiconductor electrode and a metal film to be an opposite electrode formed on a metal oxide film, wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 1 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 2,  $\text{RSO}_3\text{H}$  (R = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H}$ , an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , on the metal oxide film and forming the metal film on the intermediate film, the metal film directly contacting the intermediate film:

[Formula 1]

 $\text{R}_1, \text{R}_2 = \text{H}, \text{an alkyl, an aryl or an alkoxy}$ 

[Formula 2]



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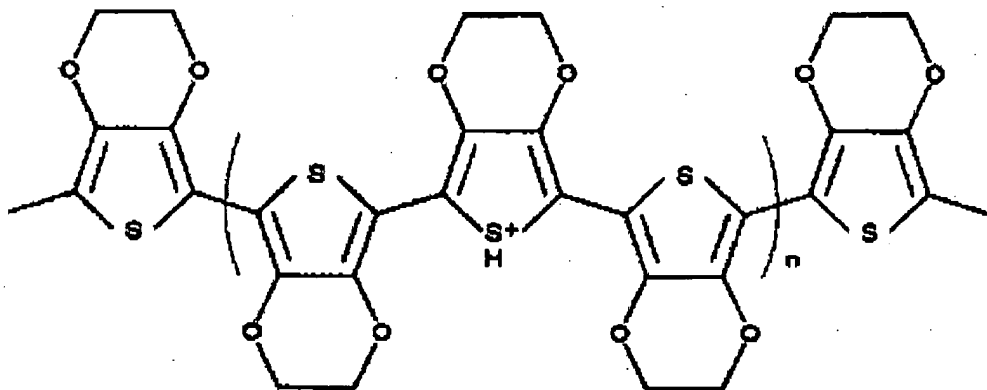
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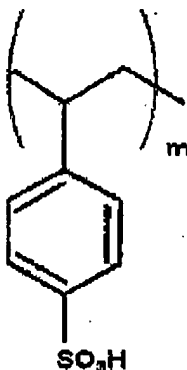
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2. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the intermediate film is composed of polyethylene dioxythiophene defined by the following Formula 3 and polystyrenesulfonic acid defined by the following Formula 4:

[Formula 3]



[Formula 4]



3. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the intermediate film is formed by using an aqueous solution containing polyethylene dioxythiophene defined by the following Formula 5, polystyrenesulfonic acid ion defined by the following Formula 6, and polystyrenesulfonic acid defined by the following Formula 7:

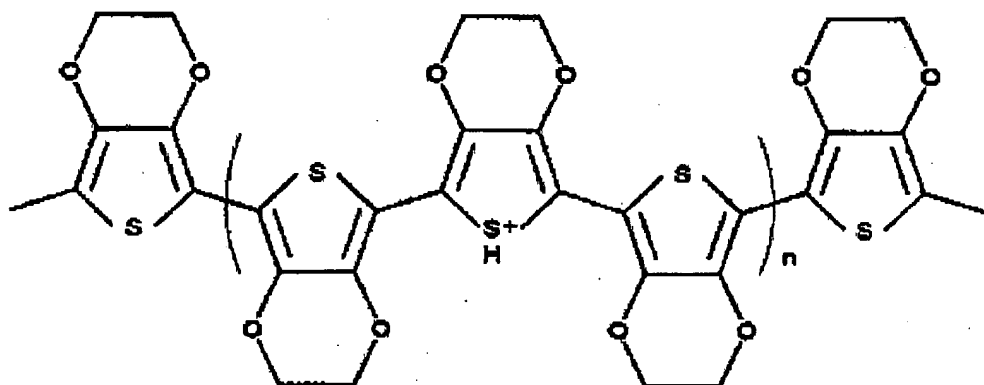
[Formula 5]

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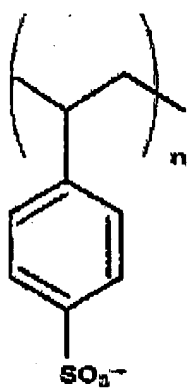
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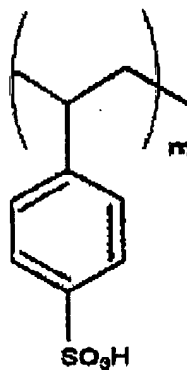
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[Formula 6]



[Formula 7]



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4. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein metal oxide film is made of at least one metal oxide selected from In-Sn oxide, SnO<sub>2</sub>, TiO<sub>2</sub>, and ZnO.

5. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the metal film is made of at least one metal selected from platinum, gold, aluminum, copper, silver and titanium.

6. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the metal film is a monolayer film or a multilayer film made of at least one metal selected from platinum, gold, aluminum, copper, silver and titanium.

7. (Currently amended) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the semiconductor electrode is composed of semiconductor fine particles, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm.

8. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 1, wherein the photoelectric conversion device is a wet type solar cell.

9. (Currently amended) A photoelectric conversion device comprising a semiconductor electrode and a metal film to be an opposite electrode formed on a metal oxide film, wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 8 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 9, RSO<sub>3</sub>H (R = an alkyl, an aryl or an alkoxy), R'OSO<sub>3</sub>H (R' = H, an alkyl, an aryl or an alkoxy), HCl, HClO<sub>4</sub>, HPF<sub>6</sub>, HBF<sub>4</sub>, and HI<sub>3</sub> is formed on the metal oxide film and the metal film is formed on the intermediate film, the metal film directly contacting the intermediate film:

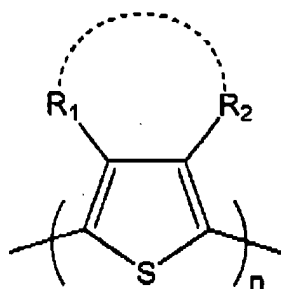
[Formula 8]

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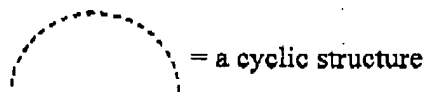
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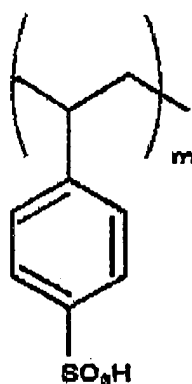
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$



[Formula 9]



10. (Currently amended) A manufacturing method of an electronic apparatus comprising a metal film formed on a metal oxide film wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 10 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 11,  $\text{RSO}_3\text{H}$  ( $\text{R} = \text{an alkyl, an aryl or an alkoxy}$ ),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H, an alkyl, an aryl or an alkoxy}$ ),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , on the metal oxide film and forming the metal film on the intermediate film, the metal film directly contacting the intermediate film:

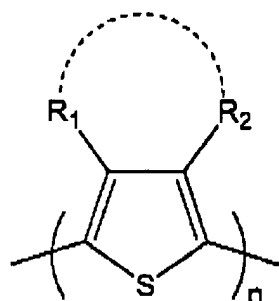
[Formula 10]

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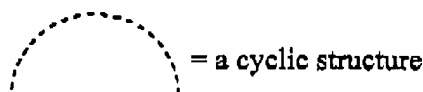
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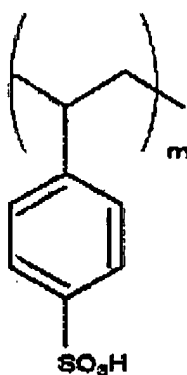
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$



[Formula 11]



11. (Currently amended) An electronic apparatus comprising a metal film formed on a metal oxide film wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 12 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 13,  $\text{RSO}_3\text{H}$  ( $\text{R} = \text{an alkyl, an aryl or an alkoxy}$ ),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H, an alkyl, an aryl or an alkoxy}$ ),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , is formed on the metal oxide film and the metal film is formed on the intermediate film, the metal film directly contacting the intermediate film:

[Formula 12]

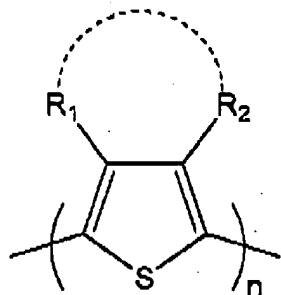
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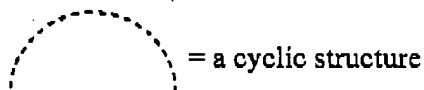
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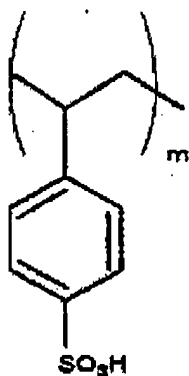
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$



[Formula 13]



12. (Currently amended) A metal film formation method for forming a metal film on a metal oxide film, wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 14 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 15,  $\text{RSO}_3\text{H}$  ( $\text{R} =$  an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H, an alkyl, an aryl or an alkoxy}$ ),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , on the metal oxide film and forming the metal film on the intermediate film, the metal film directly contacting the intermediate film:

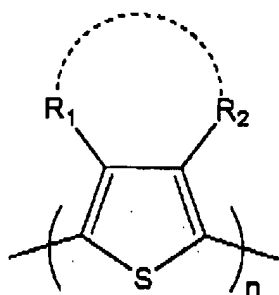
[Formula 14]

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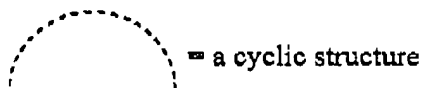
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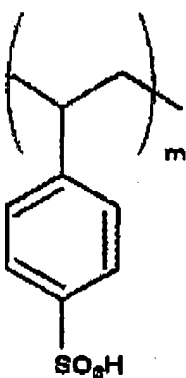
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$



[Formula 15]



13. (Currently amended) A layer structure comprising a metal film formed on a metal oxide film, wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 16 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 17,  $\text{RSO}_3\text{H}$  ( $\text{R} = \text{an alkyl, an aryl or an alkoxy}$ ),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H, an alkyl, an aryl or an alkoxy}$ ),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , is formed on the metal oxide film and the metal film on the intermediate film, the metal film directly contacting the intermediate film:

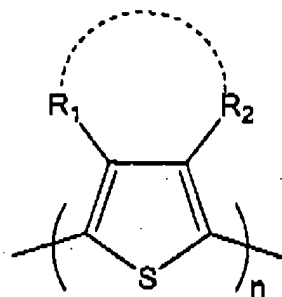
[Formula 16]

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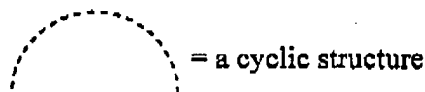
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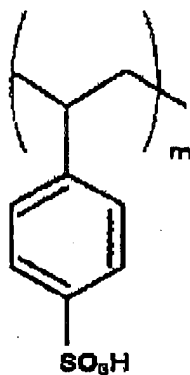
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$



[Formula 17]



14. (Currently amended) A fabrication method of a photoelectric conversion device comprising a semiconductor electrode composed of semiconductor fine particles on a metal oxide film, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 18 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 19,  $\text{RSO}_3\text{H}$  ( $\text{R} = \text{an alkyl, an aryl or an alkoxy}$ ),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}' = \text{H, an alkyl, an aryl or an alkoxy}$ ),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , on the metal oxide film and forming the semiconductor electrode on the intermediate film, the metal film directly contacting the intermediate film:

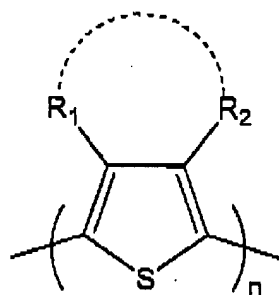
[Formula 18]

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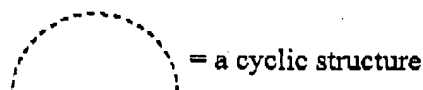
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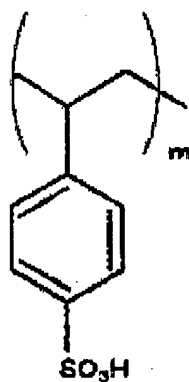
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$R_1, R_2 = \text{H, an alkyl, an aryl or an alkoxy}$

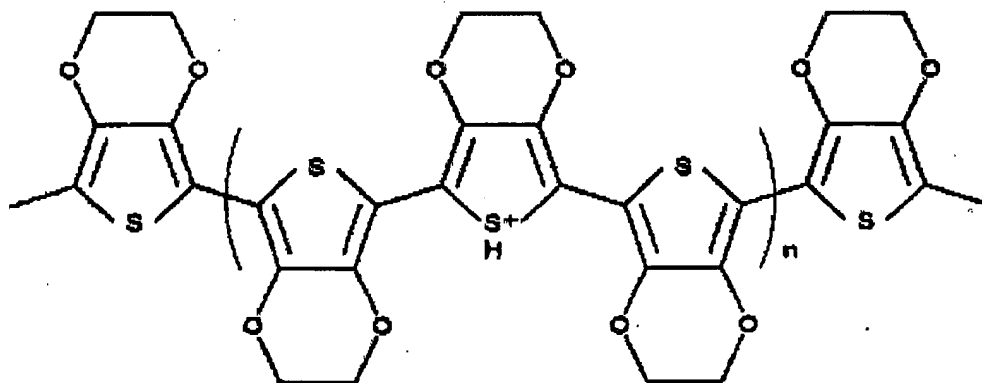


[Formula 19]



15. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the intermediate film is composed of polyethylene dioxythiophene defined by the following Formula 20 and polystyrenesulfonic acid defined by the following Formula 21:

[Formula 20]



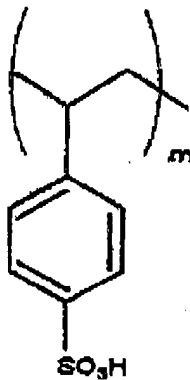
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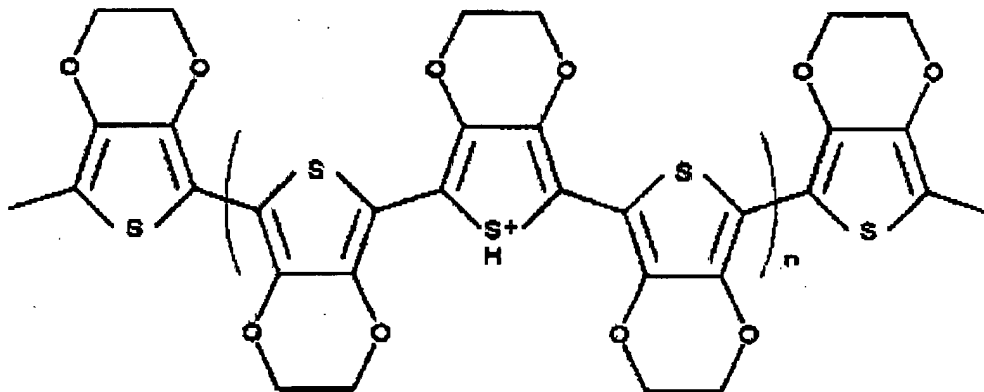
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[Formula 21]



16. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the intermediate film is formed by using an aqueous solution containing polyethylene dioxythiophene defined by the following Formula 22, polystyrenesulfonic acid ion defined by the following Formula 23, and polystyrenesulfonic acid defined by the following Formula 24:

[Formula 22]



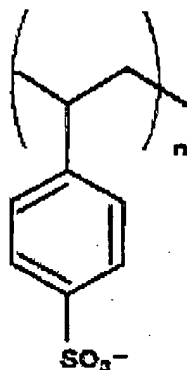
[Formula 23]

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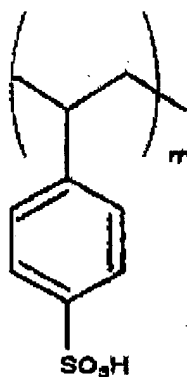
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[Formula 24]



17. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein metal oxide film is made of at least one metal oxide selected from In-Sn oxide,  $\text{SnO}_2$ ,  $\text{TiO}_2$ , and  $\text{ZnO}$ .

18. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the metal oxide film is formed on a transparent plastic substrate.

19. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the semiconductor electrode is formed by using a strongly acidic semiconductor fine particle dispersion.

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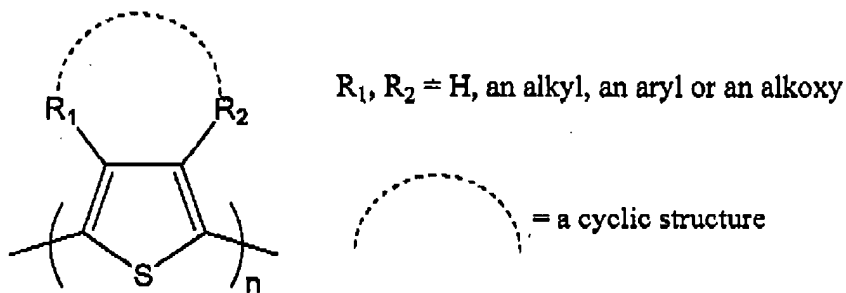
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20. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the semiconductor electrode is formed at a temperature not lower than 100°C and not higher than 140°C.

21. (Original) The fabrication method of a photoelectric conversion device as claimed in claim 14, wherein the photoelectric conversion device is a wet type solar cell.

22. (Currently amended) A photoelectric conversion device comprising a semiconductor electrode composed of semiconductor fine particles on a metal oxide film, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 25 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 26,  $\text{RSO}_3\text{H}$  (R = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  (R' = H, an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}_5$  is formed on the metal oxide film and the semiconductor electrode is formed on the intermediate film, the semiconductor electrode directly contacting the intermediate film:

[Formula 25]

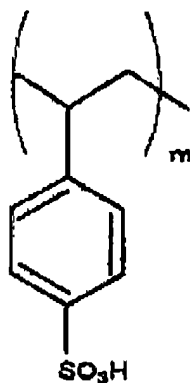


[Formula 26]

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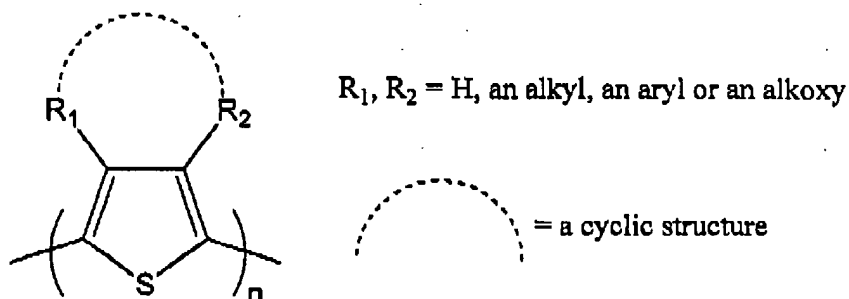
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23. (Currently amended) A manufacturing method of an electronic apparatus comprising a semiconductor electrode composed of semiconductor fine particles on a metal oxide film, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 27 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 28,  $\text{RSO}_3\text{H}$  ( $\text{R}$  = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}'$  = H, an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , on the metal oxide film and forming the semiconductor electrode on the intermediate film, the semiconductor electrode directly contacting the intermediate film:

[Formula 27]



[Formula 28]

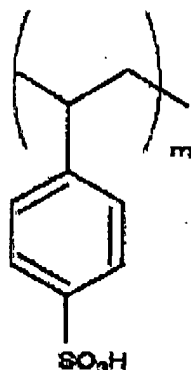
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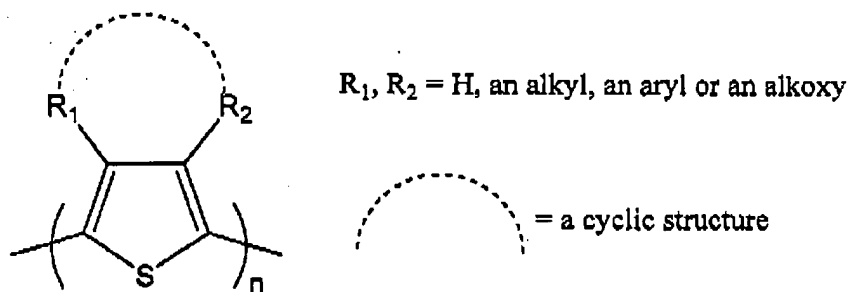
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24. (Currently amended) An electronic apparatus comprising a semiconductor electrode composed of semiconductor fine particles on a metal oxide film, the semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 29 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 30,  $\text{RSO}_3\text{H}$  ( $\text{R}$  = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}'$  =  $\text{H}$ , an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , is formed on the metal oxide film and the semiconductor electrode is formed on the intermediate film, the semiconductor electrode directly contacting the intermediate film:

[Formula 29]



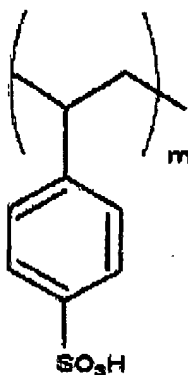
[Formula 30]

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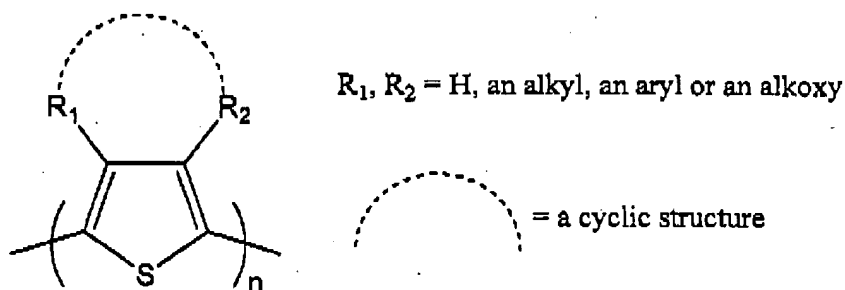
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25. (Currently amended) A semiconductor fine particle layer formation method for forming a semiconductor fine particle layer on a metal oxide film, the semiconductor fine particle layer including semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein the method includes steps of forming an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 31 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 32,  $\text{RSO}_3\text{H}$  ( $\text{R}$  = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}'$  =  $\text{H}$ , an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}_5$  on the metal oxide film and forming the semiconductor fine particle layer on the intermediate film, the semiconductor electrode directly contacting the intermediate film:

[Formula 31]



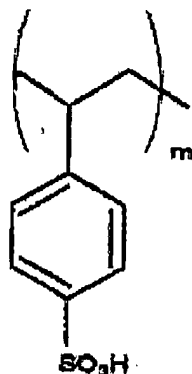
[Formula 32]

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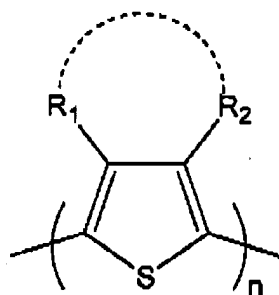
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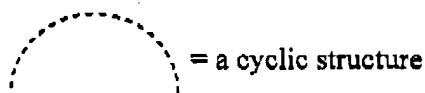


26. (Currently amended) A layer structure comprising a semiconductor fine particle layer on a metal oxide film, the semiconductor fine particle layer including semiconductor fine particles having an average particle diameter of primary particles ranging between approximately 1 nm to approximately 200 nm, wherein an intermediate film comprising at least one compound selected from polythiophene defined by the following Formula 33 and its derivatives as well as polystyrenesulfonic acid defined by the following Formula 34,  $\text{RSO}_3\text{H}$  ( $\text{R}$  = an alkyl, an aryl or an alkoxy),  $\text{R}'\text{OSO}_3\text{H}$  ( $\text{R}'$  =  $\text{H}$ , an alkyl, an aryl or an alkoxy),  $\text{HCl}$ ,  $\text{HClO}_4$ ,  $\text{HPF}_6$ ,  $\text{HBF}_4$ , and  $\text{HI}$ , is formed on the metal oxide film and the semiconductor fine particle layer is formed on the intermediate film, the semiconductor electrode directly contacting the intermediate film:

[Formula 33]



$\text{R}_1, \text{R}_2 = \text{H}$ , an alkyl, an aryl or an alkoxy



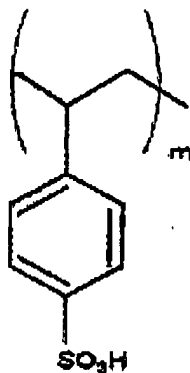
[Formula 34]

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27. (New) The fabrication method of claim 1, further comprising injecting an electrolytic layer between the metal film and a semiconductor fine particle layer.
28. (New) The photoelectric conversion device of claim 9, further comprising an electrolytic layer disposed between the metal film and a semiconductor fine particle layer.
29. (New) The fabrication method of claim 14, further comprising injecting an electrolytic layer between a metal film and the semiconductor electrode.
30. (New) The photoelectric conversion device of claim 22, further comprising an electrolytic layer disposed between a metal film and the semiconductor electrode.
31. (New) The semiconductor fine particle layer formation method of claim 25, further comprising injecting an electrolytic layer between a metal film and the semiconductor fine particle layer.

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If the Examiner has any questions concerning the foregoing prior to the scheduled interview, the Examiner is invited to contact the undersigned at the number listed below.

Dated: March 19, 2008

Respectfully submitted,

By Randy J. Pritzker  
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